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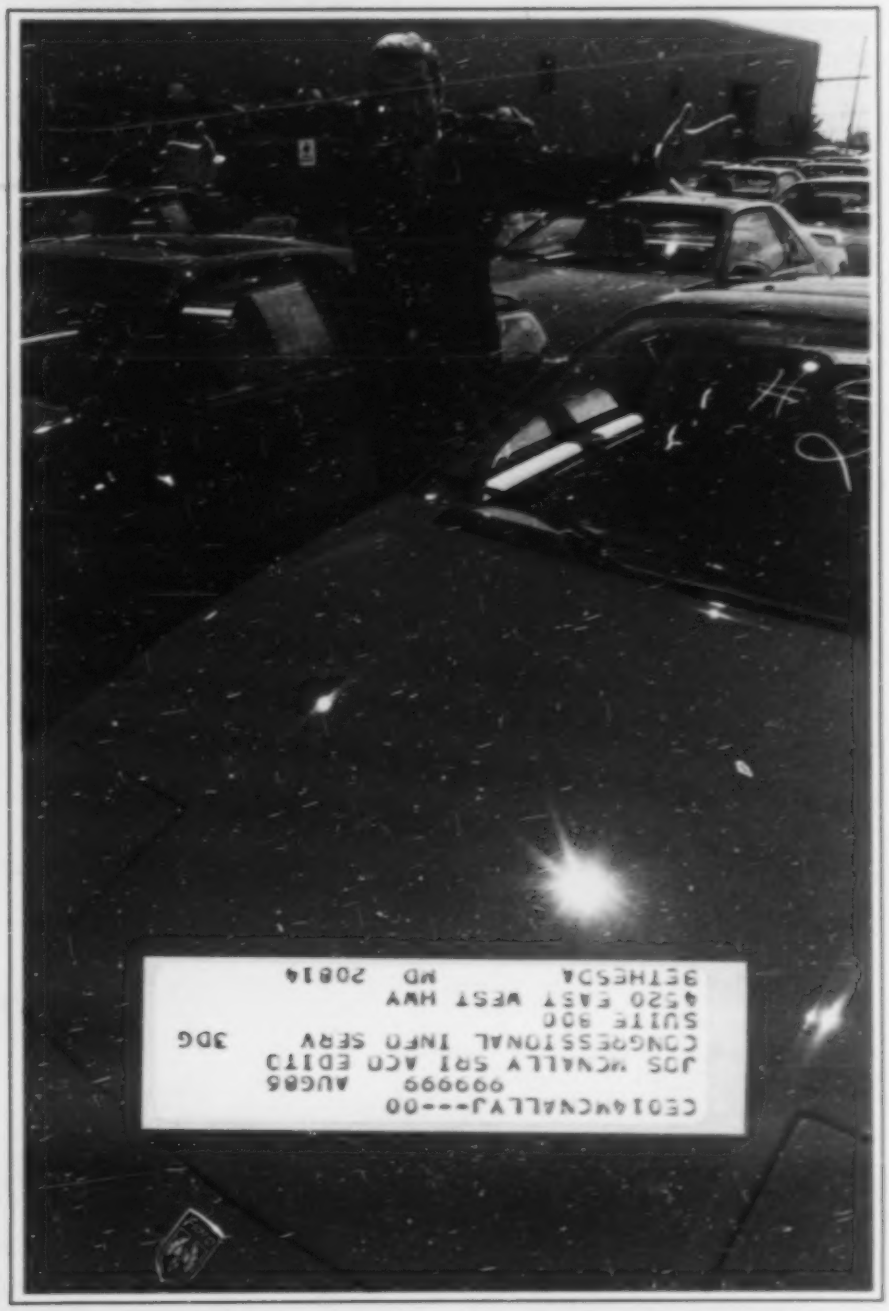

DO YOU KNOW ME?

I Started A Plastics Revolution

Global Mergers & Marriages: Keep Track With Al's Centerfold Chart

Boom Times For Galvanized Steel

Sha-ZAMA! Nissan's Number One Robot Plant

AUTOMOTIVE INDUSTRIES

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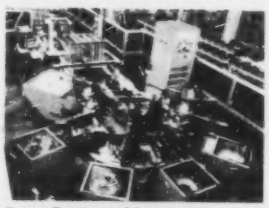

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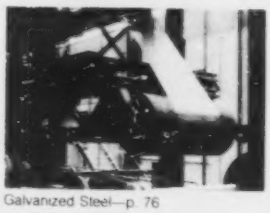

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Hulki Aldikacti standing among the revolutionary plastic-bodied cars he helped create at the Pontiac, MI Fiero plant. Photo by Ed Noble.

NEXT MONTH

New Cars '86: The guts, the glamour, the glory—the goofups. Also: What Engine Where? and all the new cars Europe has to offer.

QUOTABLE

"Y'all go back where you came from, we don't need you down here."—spoken by a housewife in a passing car in Spring Hill, TN, during GM's announcement that Saturn would land there.

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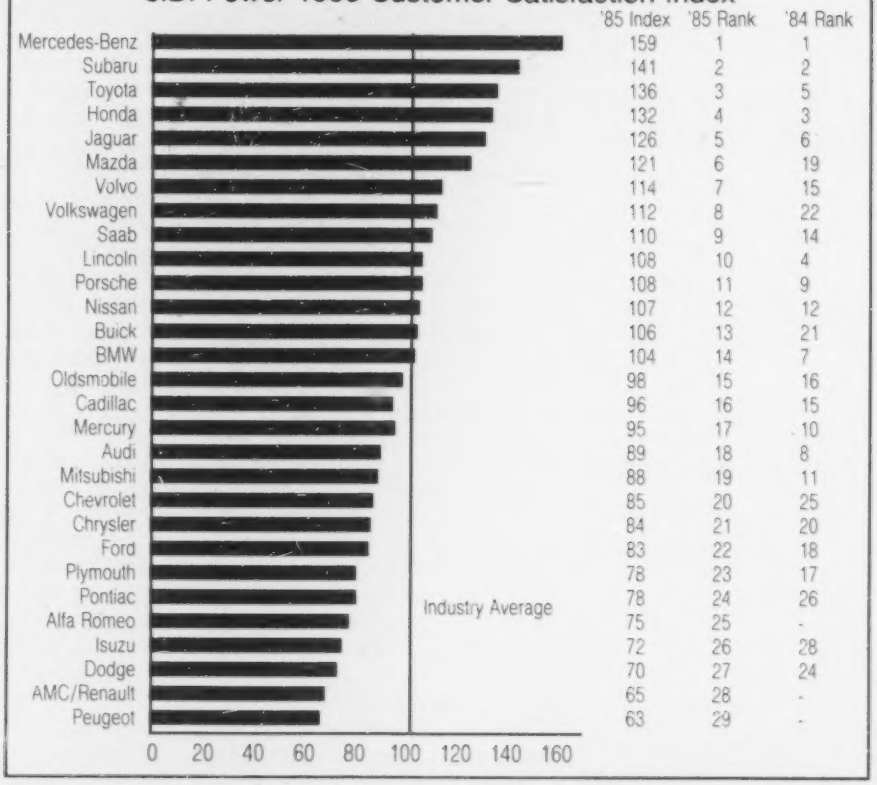
I Can't Get No...

Satisfaction. Dramatic gains by five automakers and a number of disappointing ratings drops by others are revealed in the 1985 Customer Satisfaction Index by auto market analysts J.D. Power and Assoc. And for the second year in a row, Subaru placed second to perennially top-ranked Mercedes-Benz. The annual Power survey queried **'84 model-year new car buyers** 12 to 14 months after purchase on various service and ownership details. This year a bigger sample size—almost 20,000 respondents—gives the survey more statistical validity, allowing market segment and model analysis this time.


J.D. Power 1985 Customer Satisfaction Index
'85 Index
'85 Rank
'84 Rank
Mercedes-Benz 159 1 1
Subaru 141 2 2
Toyota 136 3 5
Honda 132 4 3
Jaguar 126 5 6
Mazda 121 6 19
Volvo 114 7 15
Volkswagen 112 8 22
Saab 110 9 14
Lincoln 108 10 4
Porsche 108 11 9
Nissan 107 12 12
Buick 106 13 21
BMW 104 14 7
Oldsmobile 98 15 16
Cadillac 96 16 15
Mercury 95 17 10
Audi 89 18 8
Mitsubishi 88 19 11
Chevrolet 85 20 25
Chrysler 84 21 20
Ford 83 22 18
Plymouth 78 23 17
Pontiac 78 24 26
Alfa Romeo 75 25 -
Isuzu 72 26 28
Dodge 70 27 24
AMC/Renault 65 28 -
Peugeot 63 29 -
Industry Average
0 20 40 60 80 100 120 140 160

Interesting factors lurk behind this survey's ratings changes according to George C. Peterson, director of automotive programs for Power. **Mazda**, which rose to sixth from 19th place in '84, did so after exorcising the '83 driveability demons in its 626 and GLC models, says Peterson. **Volkswagen's** climb to 8th spot from 22nd "indicates the company's attention to detail; they really got it right on the last Rabbits," he explains, while noting that quality of US-built VWs is "equal" to that of the German-built Volkscars. The "best attention to dealer training and field service in the US industry" helped **Buick** shoot up to 13th from 21st in '84. **Lincoln** kept its No. 1 position among domestic marques but dropped from fourth to 10th place due, Peterson explains, to fit-and-finish and other early production glitches on the Mk.VII and Continental.

Peterson says that automakers with heavy four-cylinder engine mixes seem to fare poorly, which partially explains **Chrysler Corp.'s** low ratings. However, ChryCo's Mitsubishi **captive import** models, lumped with Chrysler domestics for the first time, pulled the ratings of all three divisions down because of a myriad of service problems. **Ford** and **Chevrolet** ratings are also more service-related, says Peterson, but both contain a wide satisfaction disparity between models: for example, Caprice and Crown Victoria each showed few complaints, while Corvette, Camaro and four-cylinder Mustangs scored poorly due to unsatisfactory service. Finally, Peterson points out that the little things mean a lot—nagging radio problems and sagging service standards hurt **Peugeot**.

GLOBAL MERGERS NET HARDWARE FOR US; SURVIVAL FOR EUROPE

With the competition mounting and over-capacity endemic, European car and component manufacturers see the answer in more and more cooperation.

The Saab 9000 was the first example of the four-way cooperative agreement between European carmakers Saab, Lancia, Fiat and Alfa Romeo. There are some common parts and the basic design and development was shared.

by Peter J. Mullins

While Ford pioneered the concept of building and marketing cars on a global scale, it's the Japanese who have tweaked the idea to the point that they can, seemingly at will, apply crippling competitive pressures on carmakers in Europe and the US.

Other car producers now realize that they too must become global or die. Hence, the bewildering network of alliances, joint ventures and cooperation agreements which now exist within the global motor industry.

In the US, the tie-ups between GM and, respectively, Toyota, Suzuki, and Isuzu have been more toward supplying product for the booming US market than anything else. And the forthcoming ventures between Mazda and Ford, and Chrysler and Mitsubishi, are also driven by the need for cost-competitive small cars. The link between AMC and Renault, where the French company holds a 46.1% interest in the American automaker, also feeds AMC the necessary capital and technology to build modern cars in the US.

The Continental Difference

In Europe, however, the thrust toward mergers takes on a different focus. The marketplace has failed to fulfill the fond hopes of the '70s. Instead of around 12-14 million cars/year, we are currently seeing a European market of only 10 million. And not only that, European car exports of over 3 million have been halved by Japanese competition and are still dwindling.

The result is structural over-capacity of something like 20% with severe pressure on profits as carmakers cut prices to preserve market shares. In the 'car wars' of recent years, the six top volume carmakers in Europe have been slugging it out, each with 11-12% of the total market. This leaves them financially weak and in a poor position to find the investment for model replacement.

As Data Resources (DRI) says in its latest World Automotive Forecast: "The European industry needs to respond to the shortened product cycle being adopted by Japanese competitors, where a 4-5 year norm has been established against the 8-9 year cycle still common in Europe."

Deeper Cooperation Needed

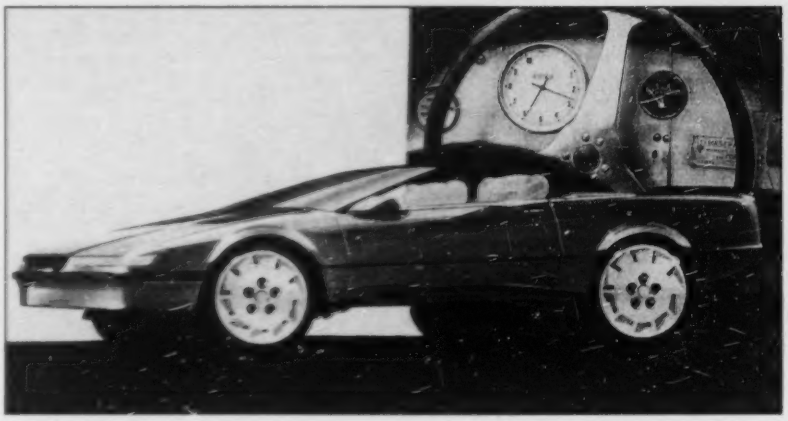
What seems obvious is that, as the DRI report puts it, "Joint component development alone will not offer rapid enough savings to head off gathering difficulties. The forms of cooperation [between companies] will have to go much deeper."

It is with this background that the recent news about a tie-up between Ford and Fiat is so interesting. At the time of writing there is no news except that both companies have had teams of experts examining possible areas of cooperation for as long as eighteen months. What Ford would dearly like to do is whittle away some of its less-productive and high-cost capacity but it knows it could run into political storms if it started closing plants in Europe.

This highlights one of the special characteristics of the European automotive scene: the extensive political patronage of 'national' motor companies. Firms like BL in Britain, Alfa Romeo in Italy and, to a lesser extent, VW and BMW in Germany would probably have ceased to exist if they had not been bailed out at some time or another by government (or local government) money.

Thus, commercial logic has been flouted and the fragmentation of the European motor industry perpetuated. The industry is now looking for ways of getting around this problem of fragmentation by combining forces. Part of Fiat's attraction to Ford, incidentally, is that although it is an 'establishment' company, it is wholly private.

Brand-new Lancia Y10 is the first car to use the FIRE 1000 engine, a joint project between Fiat and Peugeot.



Artist's rendition of the joint venture sports car Maserati and Chrysler will build for Chrysler to sell in the US.

Fiat/Alfa Romeo/Saab Link

Among the more imaginative cooperative schemes which have been pursued in Europe is the Fiat/Alfa Romeo/Saab project to provide a top-of-the-range model for each company. Two of these have already been launched—the Saab 9000 and the Lancia Thema. Fiat is announcing its version in the fall and Alfa Romeo next year.

Much of the basic design work was shared and the cars have some common components, but each manufacturer bodies and finishes the car himself with different levels of trim and performance to appeal to different market sectors. So far, the venture has proved a success.

In Europe, the most comprehensive joint venture is the Austin Rover Group/Honda collaboration. This has built up over the years from the Acclaim, a Japanese car built in England under license and with some ARG input, through the Rover 200 series (also a licensing agreement but with considerably more British input and redesign) to the XX model, a car designed from scratch by both companies. The XX will be built in both Honda and Rover versions and marketed alongside each other in all markets, including the two home ones. This is the car which will herald BL's return to the US market.

Recently, both companies announced a further venture, the YY project. In the UK, this will replace ARG's Maestro and, like the XX, will be built by both companies in two versions. This car will also be launched in the US.

There is currently some suggestion that Austin Rover may eventually manufacture some of the Honda models in Britain and this would have the effect of taking up some of the British company's surplus capacity.

The other interesting Japanese/European cooperation in carmaking is the Alfa Romeo/Nissan Arna project. Nissan Cherry (US' Pulsar) body shells are shipped in panel form from Japan to Pomigliano in Italy, assembled and then fitted with Alfa engines and a mixture of other Nissan and Alfa components. Again, the arrangement meets both parties' self interest: the Italian company adds to its range without huge capital investments; and its Japanese partner gains entrance to an Italian market tightly closed to Japanese vehicles.

Nissan also has had an interest in Motor Iberica, a Spanish truck producer and the Japanese company intends to start car manufacturing there in 1987. Production rate will be in the

(Continued)

Japan Not Looking To Southeast Asia for Parts

While many US automakers are looking towards Southeast Asia as a sourcing Mecca, the Japanese auto industry is not likely now or at any point in the foreseeable future to move its sourcing operations into this arena.

Explains Steven Usher, auto industry analyst for Kleinwort, Benson Ltd., "The close-knit nature of the Japanese auto industry combined with the limited production capacity and lower product quality of many of these overseas operations will surely prevent Japanese automakers from obtaining a significant portion of their components from Asia."

Imports of auto parts and components totaled only 63.5 billion yen ($254 million) during 1984, and Nissan alone accounted for nearly 80% of the total. Virtually all of the imports originated in the US and other industrialized countries—which could well be a defensive move on the part of the Japanese industry to avoid protectionist backlash from the US Congress.

8500 Firms Supplying Parts

All totaled, there are an estimated 8500 firms located throughout Japan which are supplying parts and components to the Japanese auto industry. Many of these belong to large corporate groupings. Toyota, for instance, is said to have over 220 parts makers under its control; Nissan has over 150.

More importantly, these firms still account for well over 95% of total parts and components purchased by the Japanese auto industry. In fiscal 1984 (concluded this past March), Japanese auto parts production totaled 6.1 trillion yen ($24.6 billion). Imports, which generally come from the United States and other industrialized countries, amounted to only about 1% of that total.

Unlike the US where in-house production can account for well over half of component requirements, an estimated 70% of Japanese parts production is handled outside. Moreover, supply generally is conducted on a "just-in-time" basis for the purpose of keeping inventories low.

Any attempt to expand parts supply offshore into Asia, states Usher, would not fit well into this structure.

This issue, however, is still largely a non-issue as the components industry throughout much of Asia lacks the capacity to meet even local requirements. One of the reasons cited for Toyota's decision last year to back out of its much-publicized Taiwan production venture concerned this lack of capacity.

For the most part, Japanese parts suppliers have followed their group leaders overseas. Toyota, again as an example, is producing knockdown (KD) vehicles in Indonesia, Malaysia and Thailand. Nippondenso, one of the main members of the Toyota group, also is represented in each of those countries.

Japanese auto parts production totaled $24.6 billion last year. Imports amounted to only about 1% of that total.

Rushing for China

Concerning the broader issue of overseas production, Japanese automakers are well established throughout Asia with operations in Indonesia, Malaysia, the Philippines, South Korea, Thailand and Taiwan. In recent months there has been a rush to gain a foothold in the fast-growing Chinese market.

Of the major Japanese makers, Nissan Motor Co. last year led all other manufacturers in the overseas shipment of KD units.

Top-ranked Toyota also is conducting local production in 20 countries, including Indonesia, Malaysia, Thailand, Bangladesh, Pakistan and, most recently, India.

At present more than 25 local assembly and production operations have been established throughout Southeast Asia, and a number of these date back to the late '50s.

The scale of most of these ventures is rather small, as average yearly production is under 15,000 units. In the recently concluded Japanese fiscal year, KD set exports to the region (excluding CKDs) totaled 257,581 units. While representing 27% of total Japanese KD exports worldwide, the total nevertheless is comparatively small.

"The important thing to keep in mind," stresses Usher, "is that auto production in Asia is not that significant. The market, however, does provide a fairly stable source of growth."

Usher adds that where Japanese involvement exists it will tend to remain mostly in the areas of parts supply and know-how.

"If the Japanese aren't there," he says, "someone else will be. In that sense, they seem to be looking at the market from a long-term perspective."

The Korean Connection

While most Japanese makers have expressed little or no interest in sourcing from Asia, Mitsubishi Motors stands as an exception. The Tokyo-based company, which has been instrumental in the early success of Hyundai Motor Co. of South Korea, providing both technical assistance and production components, has indicated that in the future it may import such components as engines, transmissions and pressings.

Hyundai, in which Mitsubishi Motors and Mitsubishi Corp. combined hold a 15% equity, is the largest auto manufacturing operation in the region.

Largely because of considerably lower wages, A Mitsubishi Motors executive in Tokyo estimates that the landed cost of Korean-made components could be as much as 10% less costly than those produced in Japan.—*Roger Schreffler*

region of 40,000 cars/year.

There are numerous lesser deals between carmakers. Volvo and Renault have been associated for some years and at one time Renault had 15% of Volvo shares but relinquished this stake in 1983. However, Volvo's new small car from its Dutch plant is designed on a Renault 9/11 floor pan.

Toyota has a 21.5% stake in Lotus and the two companies are cooperating in the production of a sports car known as the X100 using a Toyota engine. This car will be aimed at the US market.

The Spanish government is negotiating the sale of a controlling interest in SEAT to VW and it is likely that several of the West German company's models will be made in Spain.

VW also has a deal with Nissan for the manufacture and sale in Japan of the Santana (US' Quantum). This venture started in 1980 when VW's US operation was turning sour and Nissan saw the need to defuse trade friction between Japan and Europe, so it tended to be long- term and speculative on both sides.

However, the deal is proving successful and there is now a likelihood that the cooperation could grow into something much wider. Areas of future cooperation could include the Americas, South Africa, and exchange of know-how and joint purchases and/or production of engines, transmissions and suspension systems. It is understood that Nissan has already invited the German company to make the Prairie (US' Stanza wagon) in Europe.

Porsche has designed and engineered a new Russian Lada to replace the old model which was based on Fiat designs. Chrysler and Maserati are associated in a new sports car project. Reliant of the UK is making

Nissan builds the Volkswagen Santana in Japan; Volkswagen may reciprocate by building the Nissan Prairie (above) in Germany. The Prairie is sold in the US as the Stanza wagon.

Ford's new RS2000, a low-volume high-perfor-mance model intended to take Ford back into rallying. And Mazda and Isuzu (respectively partly owned by Ford and GM) have been cooperating with Pol-Mot, the Polish state-owned enterprise to produce a car for the European market.

A clear trend over the past few years is the low-cost sourcing of components in countries like Korea, Taiwan and Hong Kong. This will continue. But the same thing is happening with complete vehicles.

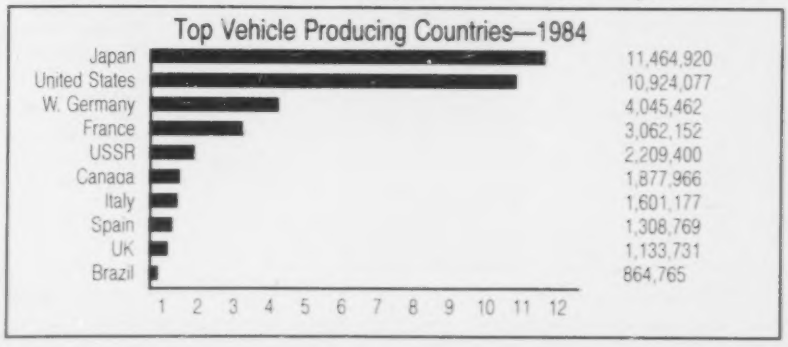
In America, both GM and Ford are bringing in cars and trucks from their Japanese partners and selling them under their own marques.In Europe, imports from Brazil are running at something like 100,000 vehicles a year as Ford, VW and Fiat take advantage of their low-cost base there.

Ford sees the practice as the only way to compete in markets where there are no restrictions on Japanese imports. Brazilian-built Escorts selling some 10-15% cheaper than European-built ones are being applied to Scandinavia and Switzerland and Ford has said that it could bring in cars from its partner Toyo Kogyo in Japan. Ford sells Mazda vehicles under the Ford badge in the Far East.

Fiat imports the 126 model from Poland and engines and some car-derived vans from Brazil. Part of the problem of high imports (57%)—which bedevil the UK market where both Ford and GM have a substantial market share—is that these companies bring many cars in from Spain which still has a high tariff barrier.

Europe is also worried about the possibility of increased penetration from Eastern Bloc countries. Besides the Lada, there is also the Zastava Yugo range based on Fiat designs from Yugoslavia which have been well-received in Europe. Polish/Japanese cooperation could also mean Japanese products coming in through the back door of Europe in countries like Italy and France, where the front door is virtually closed.

From the beginning of the '80s, we have seen this crunch situation building up in Europe and the next few years are going to be fairly critical. What is certain is that the pace of collaboration will undoubtedly speed up and the ventures will be more fundamental than in the past. ■



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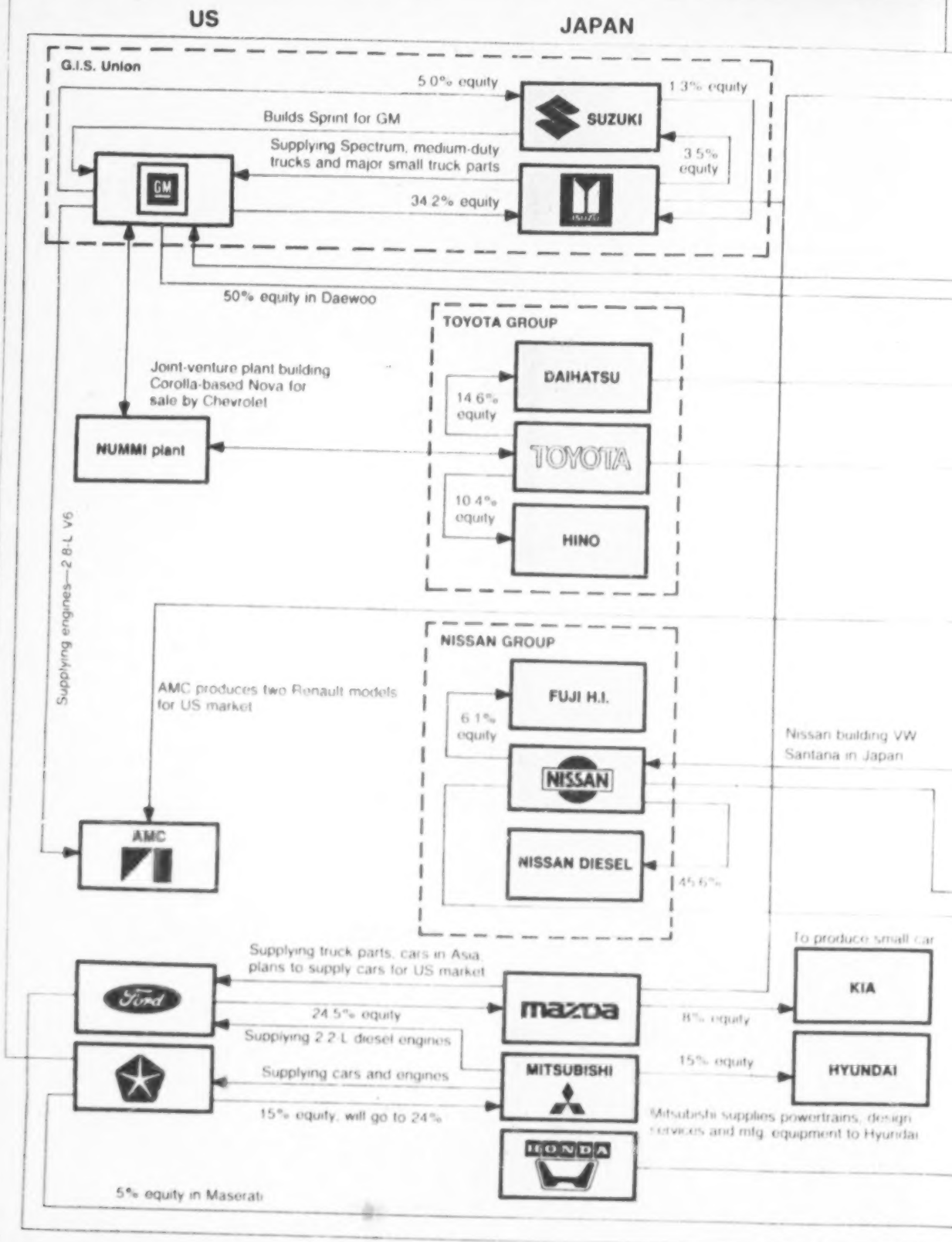
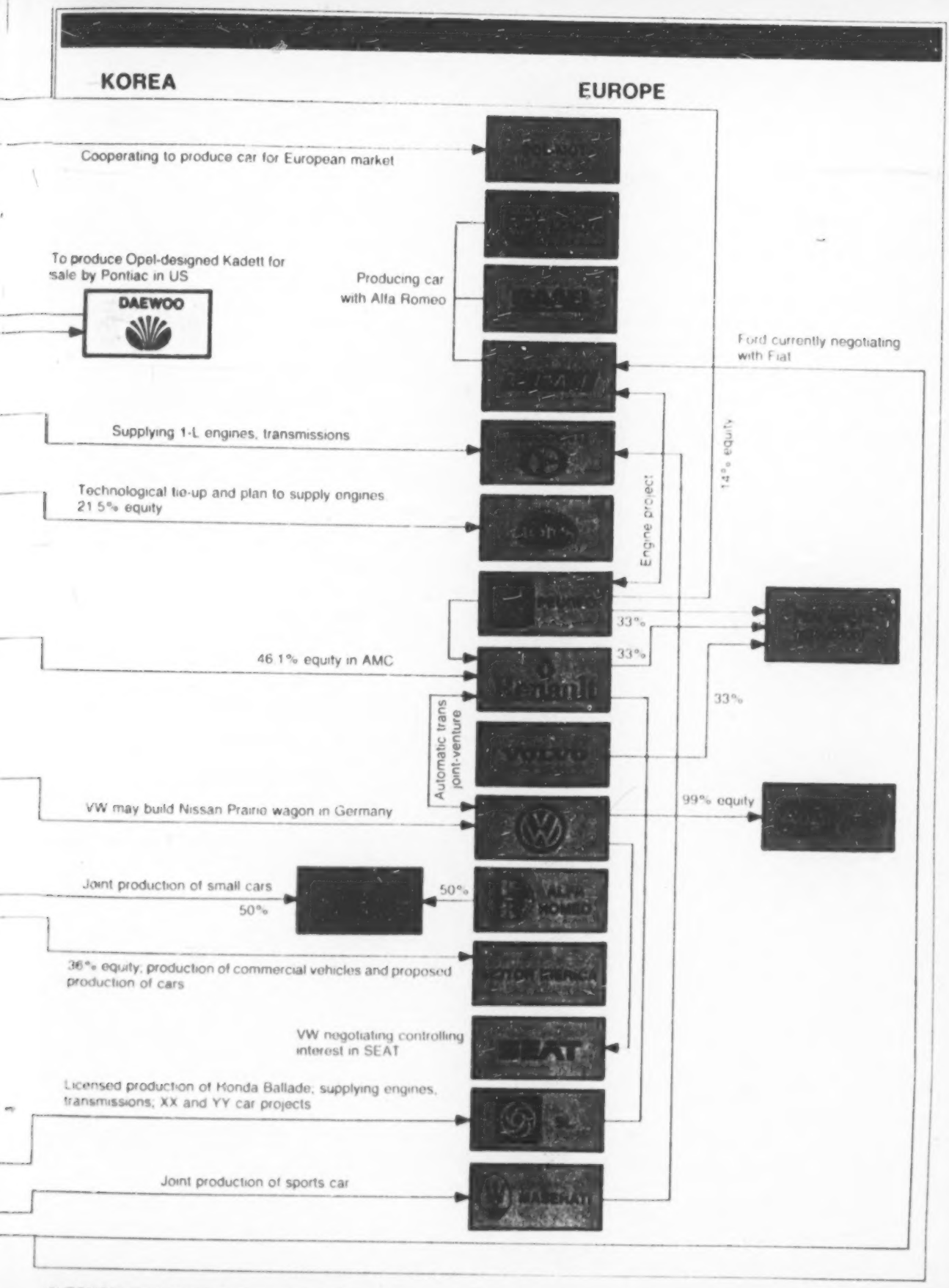
GLOBAL JOINT VENTURES IN AUTOMOBILE PRODUCTION




KOREA
EUROPE
Cooperating to produce car for European market
To produce Opel-designed Kadett for sale by Pontiac in US
DAEWOO
Producing car with Alfa Romeo
Ford currently negotiating with Fiat
14% equity
Supplying 1-L engines, transmissions
Technological tie-up and plan to supply engines 21.5% equity
Engine project
33%
33%
46.1% equity in AMC
Automatic trans joint-venture
33%
VW may build Nissan Prairie wagon in Germany
99% equity
Joint production of small cars
50%
50%
36% equity; production of commercial vehicles and proposed production of cars
VW negotiating controlling interest in SEAT
Licensed production of Honda Ballade; supplying engines, transmissions; XX and YY car projects
Joint production of sports car

BOOM TIMES FOR ELECTROGALVANIZED STEEL

The scramble for corrosion protection drives US-based automakers to embrace electrogalvanized steel at a pace equal to US capacity until at least 1990.

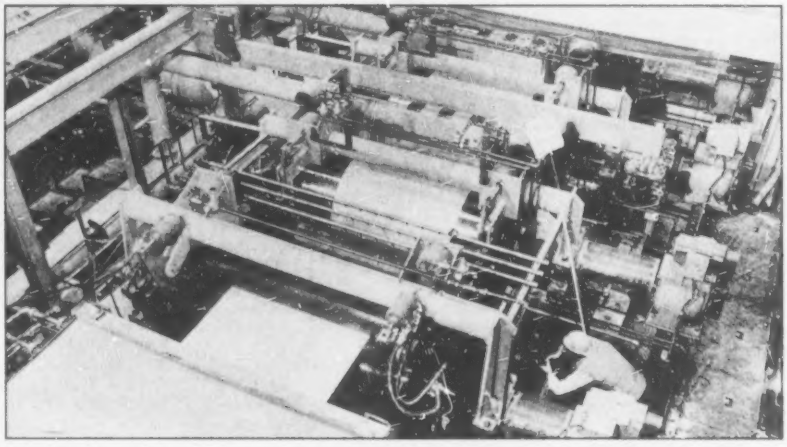
by George J. McManus and Bryan H. Berry

The demand for electrogalvanized (EG) steel among automakers in the US will probably match or exceed the available supply until at least 1990, according to industry projections. Some steel executives are predicting a US supply of 4 million tons of electrogalvanized steel by 1990—a figure most automakers say total US auto industry demand will match by then.

Next year the US automakers will demand 2.2-2.4 million tons of EG, forecasts Paul J. O'Hara, Ford's director of metals, petroleum and materials purchasing.

That demand will roughly equal the available capacity of the five new EG lines (see chart) plus the two existing ones.

In interviews with executives at GM, Ford, Chrysler, NUMMI, Nissan Motor Mfg. and Honda of America Mfg., it was discovered that each company plans a different approach to using EG for corrosion protection. The automakers initially plan to use different coating weights, too.



National Steel built a prototype electrolytic line in Portage, IN to allow auto companies to test the material it will produce.

GM's Plan

Of the 7 million tons of steel GM bought for the 1985 model year, about 1.2 million net tons, or 17%, is galvanized. That includes 800,000 tons of two-side hot-dip galvanized; and 300,000 tons of one-side galvanized steel, including 276,000 tons of one-side EG steel. The No. 1 automaker also uses 675,000 tons of Zincrometal.

For the 1986 model year, GM plans to increase its purchases of galvanized steel to 1.3 million tons. GM will use EG steel on all external panels of its new E- and K-cars. The Chevy M-vans use two-side galvanized steel for major body panels.

GM will buy an estimated 11,500 metric tons of hot-dip galvanized steel from Nippon Steel and 10,000 metric tons of EG sheet from NKK. That's because US steelmakers didn't have enough capacity to supply that steel, say GM officials.

GM already has signed long-term contracts with LTV, Armco, Bethlehem and Inland for most of its electrogalvanized steel, said John Debbink, GM's VP of materials management. "Some of those contracts extend into the 1990s," Debbink added.

By the 1989 model year, estimates one GM purchaser, GM will use 1.5 million tons of EG. "We'll buy all two-side EG," he added.

GM presently uses hot-dip galvanized steel for the car parts subjected to road salt, mud and flying objects—rocker panels and many parts not readily visible, including underside structural members. GM coats the hot-dip rocker panels with Plastisol and then paint. In addition, GM has fabricated station wagon tailgates and hatchback lids from ultra-smooth hot-dip products that have a more paintable surface than conventional hot-dip steels.

GM now uses both Zincrometal and EG for most of the exterior body panels that are most visible. These two coatings give a better surface appearance than does hot-dipping.

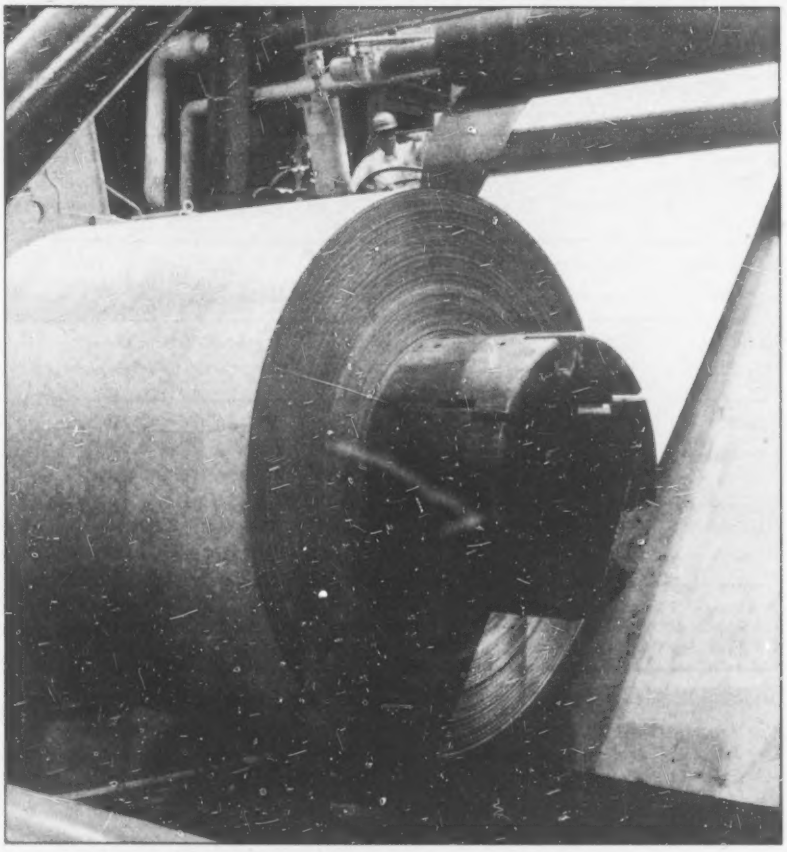
Automakers say that the roof, exposed to the least corrosive forces, is the only body panel that doesn't need the extra corrosion protection of EG.

As EG capacity comes on-stream in the US, GM plans to phase out its use of Zincrometal and completely replace that with EG. "By 1990 all the Zincrometal will be gone," predicted Gerald W. Ropers, director of body systems at C-P-C.

The automakers are trying to decide how much zinc coating each exterior panel needs. The different body panels likely will get different coatings, depending on how much they're subjected to salt and mud.

"Common sense tells us that we don't need as heavy a coating on the deck lid as on the quarter panel," said C-P-C's group director of operations, David Campbell. "But nobody has proof of that.

This is an abridged version of an article that first appeared in *Chilton's Iron Age*.



One-sided galvanized sheet at National Steel's Midwest Plant. In March, National unveiled a prototype electrolytic line at Midwest Steel.

"The test time for galvanized steel has been so long that we've tended to overkill with heavier coating weights than are needed," said Campbell. "We'll adjust our coating weights as we get information from the field." The dilemma Campbell refers to is important: Automakers aren't sure that laboratory corrosion tests accurately reflect real-world corrosion.

GM presently uses one-side EG with a zinc coating of 90 g/m² on the inside of body panels. But as the automaker discusses EG capacity with the steelmakers, GM is basing its predictions on two-side EG steel with 70 g/m² of zinc both inside and outside.

"We have enough experience with EG now that we can say that EG with the 90 coating weight is good for the life of the vehicle," said Campbell.

"We might continue using coating weights of 90 g/m² for the quarter panels," said E. H. Klove, Jr., director of paint systems in C-P-C's manufacturing engineering group. "But we'll probably use lighter coating weights around 70 g/m² for parts where corrosion isn't as severe a problem."

Ford to Drop Zincrometal

In the 1985 model year Ford used 490,000 tons of galvanized steel and 350,000 tons of Zincrometal. Total steel purchases by Ford vary between 1.6 and 2.5 million tons, depending on the number of vehicles the company produces.

For the 1988 model year the company plans to use 972,000 tons of galvanized steel and zero tons of Zincrometal. Of that 972,000 tons, said Paul J. O'Hara, Ford's director of metals, 680,000 tons (70%) will be electrogalvanized and 292,000 tons (30%) hot-dipped.

"The big jump in electrogalvanized usage will occur in the 1987 model year," said O'Hara.

Ford plans to buy EG from all five of the new lines. Rouge Steel, a subsidiary of Ford, will supply one-third of the automaker's galvanized steel. Ford has been buying one-side EG from US Steel's Erie, PA line and will continue to do so.

Ford buys about 5% of its steel from overseas; about half of that comes from Japan. Nippon Steel, Nippon Kokan, Kawasaki, and Sumitomo are the four Japanese steel suppliers, in order of tonnage shipped to Ford.

"We buy coated steel, cold-rolled steel, and Zincrometal from Japan for three reasons," said O'Hara. "(1) Some of the steels are available only from Japan. (2) We want to keep in touch with their technology. And (3) their cost is often better than here." He expects Ford to continue buying about 5% of its steel from overseas after the 1987 model year.

Ford is specifying EG coating weights of up to 60 g/m² on each side. Hot-dipping is less costly for weights above 50 g/m², the company presently believes.

Initially Ford plans to use no galvanic coating on the outside of exposed body panels. "We don't think we can paint over the zinc and get the surface appearance we want," said O'Hara. "Most of our exposed panels will use the one-side EG steel. The two-side EG will be for interior parts like floor pans and inner panels for the hood, doors and deck lid. Most of those two-side steels will be differentially coated."

Ford will rely on the integrity of its paint system to protect the outside of the car from cosmetic corrosion. For all the automakers, the adhesion of the electrocoating and phosphates to the inside of the body panels is critical to corrosion resistance. Most of Ford's exposed body panels are Zincrometal now.

Even if Ford initially uses only one-side EG for exposed body panels, it's fair to assume that it will at least consider using two-side EG there later. The Rouge EG line can coat two sides. Ford is the one of the Big Three planning to use one-side EG for exposed panels.

Chrysler Coats Heaviest

Chrysler plans to use EG steel on all exterior panels except the roof.

(Continued)

Chrysler's Joe H. King, manager of metallurgical engineering, will go even further. "In general terms, in my judgment, every panel except the roof on every car built in this country will have electrogalvanized on the outside," he says.

Initial plans at Chrysler specify the heaviest interior EG coating of any US automaker: Chrysler wants 100 g/m² of zinc on the inside and 25 g/m² on the outside.

The 25 g/m² coating of zinc on the car's exterior won't hurt the paint appearance, said King. "Chrysler successfully has painted two-side hot-dip steel on exposed body panels in the past," he said. "That shows we can paint over galvanized steel. The EG process creates no base-metal roughness that would degrade the appearance of the painted surface."

Chrysler's interior unexposed parts presently have minimum coating weights of 100 g/m² for each side of hot-dip and 50 g/m² for each side of galvannealed steel. "We don't expect electrogalvanizing to be competitive at those coating weights," said King. "But if EG proves to be economical and there's enough left-over capacity, we'll consider using it for unexposed parts."

NUMMI Buys from Japan

New United Motor Manufacturing, Inc. (NUMMI), the GM/Toyota joint venture in Fremont, CA, buys 3500 tons of steel per month. A little more than half that comes from Japan. Nippon Steel and Nippon Kokan supply the galvanized steel; Sumitomo and Kobe, the cold-rolled. Nippon, NUMMI's largest steel suppliers, supplies NUMMI with all its electrogalvanized steel.

"Except for the roof, all our exposed body panels are electrogalvanized steel," said Stephen R. Coletta, NUMMI's materials purchasing manager.

NUMMI's Nova uses the same steel specs as the car on which it's based, the Toyota Corolla Sprinter. So far, the EG steel Toyota has bought is coated on one side.

"Toyota feels that Americans use too heavy a coating weight on their electrogalvanized steel," explained Coletta. "Americans tend to use the same coating weights established for the hot-dip product. But EG doesn't require that thick a coat.

"As the new EG products are developed, the cry goes out: Use two-side EG everywhere. That's a knee-jerk reaction and not cost-effective."

The one-side EG that Nippon ships NUMMI has a coating weight of less than 25 g/m² on the inside. The hot-dipped product from NKK has double that.

NUMMI uses the same EG coating weight for all the exterior panels, including the doors, fenders, hoods and rocker and quarter panels. But as the new EG lines come on-stream, NUMMI may buy different coating weights for different exterior panels, predicted Coletta.

NUMMI buys somewhat less than half its total steel tonnage from one US source: LTV, which supplies just cold-rolled steel. LTV's performance has matched that of the Japanese, said Coletta. He estimates that there's a 10% penalty in cost and quality in US vs. Japanese steel.

The steel from LTV has had some problems in transit; LTV and NUMMI are developing new packaging. The Japanese steel is shipped to NUMMI's Fremont, CA plant in steel canisters.

When the new EG lines start up next year, NUMMI will evaluate data on the products' cost and quality. "We're not anxious to buy US EG unless its cost and quality is as good as those of our Japanese sources," said Coletta. "On the other hand, it is our longterm policy to find US sources for the parts we're presently buying from Japan."

But any new supplier of parts to New United first must undergo a one-year evaluation process by Toyota Motor Co. Toyota, which is responsible for the design of the Nova, makes sure that the new supplier's parts are cost-effective.

Honda Goes Inland

Honda of America Manufacturing Inc. buys 90% of its steel from Inland, its only US source. The company buys terneplate and hot-dip galvanized steel from Japan.

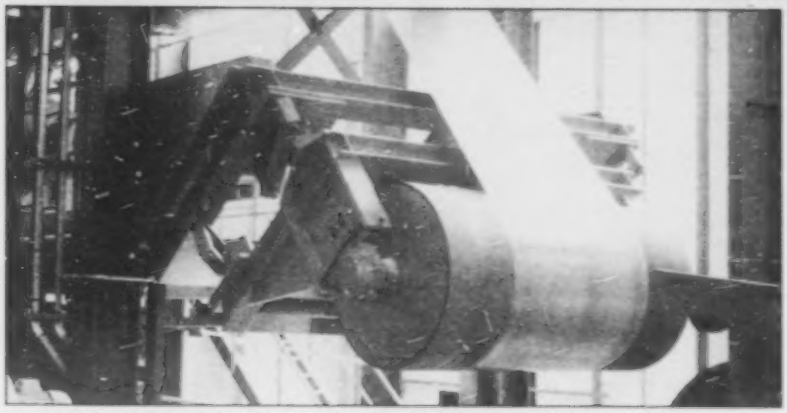
Honda presently is conducting an extensive six-month test program to choose a second steel source. The steel-selection committee hopes to make a decision by the end of this year or, at the latest, before April 1986. That's when production of the Civic starts up in Honda's Marysville, OH plant.

The automaker has eliminated Rouge and Weirton from its list of candidates for a second source of steel. Still being considered: US Steel,

WHO'S DOING WHAT WHERE IN ELECTROGALVANIZING

	LOCATION	ANNUAL TONS	COST (MILLIONS)	SUPPLIERS
National Steel	Great Lakes	400,000	$70	Nippon Kokan (Process Tech) Wean United, Westinghouse Electric—General Electric
U.S. Steel Rouge Steel	Dearborn	560-700,000	$130-$150	U.S. Steel (Carosel Tech) Wean United, Kawasaki
LTV/ Sumitomo	Cleveland	500,000	$125	Sumitomo (Process Tech) Mitsui & Co., Aetna-Standard
Armco	Middletown OH	200-400,000	$50	Arus Andritz-Ruthner (Wet Process) Stamco, Allen Bradley, Westinghouse
Bethlehem/ Inland	Waldbridge OH	400,000	$80	Arus-Andritz-Ruthner (Wet Process)

All lines are 72 inches wide and all are due to start in the first half of 1986. Not shown are existing lines of Sharon Steel or the Gary Works of U.S. Steel. A prototype line is operating at the Midwest plant of National Steel. Bethlehem has converted a tinning line at Burns Harbor.



Automotive demand for electrogalvanized steel will hit 2.2-2.4 million tons next year, according to Ford Motor Co. Steelmakers are building five new EG lines to meet the continued bullish demand.

LTV, Bethlehem, Armco and National.

"Inland has some problems but meets our needs," explained Darryl Shown, manager of purchasing at Honda of America Manufacturing. "We have no plans to use electrogalvanized steel, but we'll consider using it."

Nissan Tries Different Tack

Nissan Motor Manufacturing Corp. USA, in Smyrna, TN presently uses 800 tons per month of coated steels for its trucks. Most of that is one-side Zincrometal from Nippon Steel and Sumitomo.

None of Nissan's steel is galvanized. And alone among the eight US automakers (the six described here, plus American Motors and Volkswagen of America), Nissan USA has no plans to consider use of standard electrogalvanized steel.

Instead, Nissan next year plans to replace more that half its Zincrometal with steel that has a zincnickel bonding—electrolytically applied—and then a zinc-rich paint layer over that. Nissan currently is evaluating Kawasaki's K2, Nippon's Welcoate-2 and Sumitomo's SL, all of which fit that description.

"This second-generation material goes a step further than electrogalvanized steel," said Frederick F. Sommer, VP of engineering and planning at Nissan MMC USA. Tests at Nissan in Japan, said Sommer, have shown that this painted, plated steel resists perforation better than does EG steel, particularly after welding.

"We'll use the second-generation steel on the critical panels most subject to corrosion," said Sommer, "such as the fenders, quarter panels and truck side panels."

In March, Nissan began manufacturing the Sentra at Smyrna, all the stampings of which are made in Japan. But at the time of model changeover within the next two years, said Sommer, Nissan likely will buy some dies and use them in their current presses to stamp car parts in Tennessee, too.

If the plated and painted Japanese steel proves a big success at Nissan next year, will that make obsolete all the just-new electrogalvanized lines? Probably not, say most automakers.

"The Nissan approach sounds too expensive," said a purchaser at NUMMI. "Sure, we could have more corrosion resistance than we do now. But we don't think it's cost-effective."

Executives at GM echoed those sentiments. "We don't need an additional layer of paint over the electrogalvanized steel," said C-P-C's Campbell.

On the other hand, if Nippon, Kawasaki and Sumitomo deliver their plated, painted steel at attractive prices, the American electrogalvanizers could paint their own electrogalvanized steel. So far, however, most American automakers still think that standard electrogalvanizing is the state-of-the-art, cost-effective way of preventing car rust—and they expect electrogalvanizing to retain that status until 1990.

By the end of the decade," said Robert McBride, president of National Steel, "galvanized will account for 60% of the steel purchased by the [auto] industry, about 40 million tons."

Mystery Entry

A mystery entry in the galvanizing picture is the joint venture of Wheeling-Pittsburgh Steel Corp. and Nisshin Steel Co., Ltd. The coating line proposed by the two companies for Follansbee, WV, will be of the hot-dipped rather than the electrolytic variety.

An SAE paper given by Nisshin recently indicated the hot-dipped product would be for automotive use but for functional components rather than body sheet. The paper dealt with the performance of aluminized sheet in auto exhaust systems.

The coating project was put on hold after the bankruptcy of Wheeling-Pittsburgh. A separate subsidiary of the two companies will operate the facility and it's possible the court will allow the work to proceed.

Weirton Steel Corp. has no plans for building new electrolytic capacity. The company feels the market will be more than satisfied with the lines now under construction.

"It will be pretty well saturated," said David Gould, Weirton's VP for sheet product sales.

Weirton is probably less dependent on the auto market than other sheet producers. The company is supplying some hot dipped galvanized steel to the auto industry. This is for functional applications and has a heavier coating than is applied by electrogalvanizing.

Weirton is following the electrolytic programs and suspects capacity will be available at other mills for coating on a toll basis. The company has its own electrogalvanizing line but the coatings applied are lighter than what the auto plants require.

However, Weirton was recently licensed to produce GALFAN, which is coated with 95% zinc and 5% aluminum-mischmetal alloy. ■

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Incentives Kick Small Car Sales

by Thomas F. O'Grady

Sales incentive campaigns are the sales success story for 1985. Chrysler's reduced financing program has been running since February 14th. AMC has the longest running finance program and both manufacturers have expanded the range of cars covered since the programs were initiated. Ford and GM added their programs in late February and March, respectively, as both manufacturers felt the need to maintain market share in the small and compact segments.

At large expense, the manufacturers are boosting sales with significant reductions in finance rates. Declining interest rates were not increasing sales sufficiently. The special rates at approximately five percentage points below market are lifting sales.

The key question is whether or not the manufacturers will reinstitute or continue special financing when the programs expire. They probably will. The success of these programs and the increase in Japanese competition and penetration will force a continuation of aggressive marketing. Only AMC's program does not seem to be aiding sales. As a result of the Teamsters truckers' strike, new programs may be postponed, but they are inevitable.

In the small segment, special 8.5% financing as well as dealer incentives have not been able to stop the AMC Alliance/Encore sales decline. Model year sales of these two through July 20th totaled 96,507 compared to 138,272 units last year. It should be noted that sales of these models during the first three months of last year were helped by sales incentive campaigns, but the incentives a year ago were mild compared to the long-running reduced rate financing currently available.

AMC is suffering from problems that the financing program won't help (See *AI* April, "First Annual Industry Report Card", p. 22).

Chrysler's Omni/Horizon models benefited from both the special financing and free transmission packages. For the entire sales campaign (January 30 to April 30th) Omni/Horizon sales were 57,151, a 45% increase over last year 39,369. They are now running considerably lower with the expiration of the incentives.

Chrysler model year share of the total market through the third 10-day selling period in July equaled 13.8% compared to 11.9% a year ago. Chrysler's increase has come largely at the expense of GM, which has seen its market share drop to 55.9% on a model-year-to-date basis from 59.4% a year ago.

In response to the successful campaigns at Ford and Chrysler, GM started its financing campaign on March 20th. Cavalier sales were strong as the availability of special financing boosted volume through April by 62% over the same period in 1984 (56,816 units versus 35,102 in 1984). Between March 31 and April 30th, Cavalier supply dropped from 40 days to 21 days supply. The supply was too low to support a further financing campaign.

This generally improved level of sales has helped GM regain some market share lost earlier in the year. For the month of April, GM's share of the domestic market equaled 57.2% compared to the 55.0% in March when GM's incentives began.

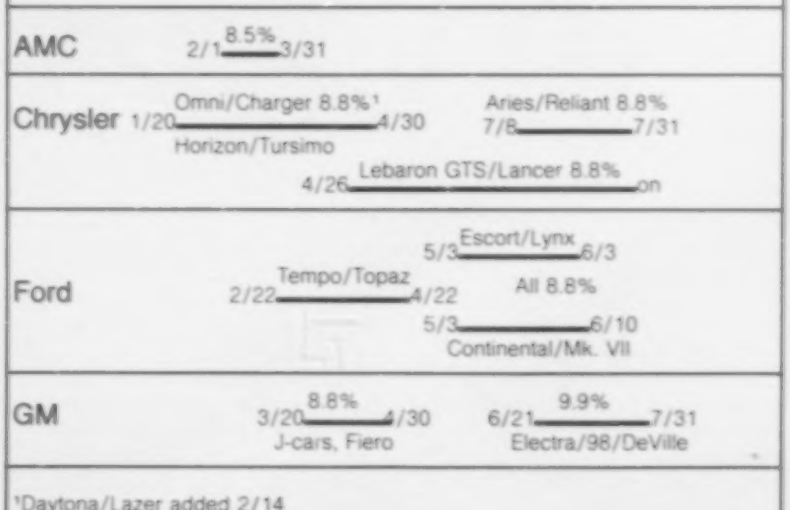
Other GM models with improved sales during this same period as a result of financing incentives are the Pontiac Sunbird and the Olds Firenza (sales up 47%). However, the Buick Skyhawk did not significantly increase its sales volume during its campaign. This may partially be the result of Buick keeping the X-car (Skylark) in its lineup, unlike the Pontiac and Olds divisions. The Skylark has posted strong sales volumes this year.

Ford introduced 8.8% financing on the Tempo/Topaz models in the compact segment from February 22 to April 22nd. For the period, Tempo/Topaz sales were up a significant 83% over the same period a year ago. Since incentives ended, these models are running considerably behind a year ago.

Incentive campaigns are not likely to end soon. The domestic manufacturers need to remain competitive with the Japanese importers, whose stocks increased during May, June and July.

The economy has not been strong. This, together with the increase of 450,000 Japanese imports and the US startup of Hyundai of Korea, should lead to some pretty stiff competition among the small and sporty car segments. In the near term, as competition heightens, look for more market campaign activity and specially packaged cars with fewer options and lower prices. ■

Big Four Incentive Programs



[1]Daytona/Lazer added 2/14

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